

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Inventor(s) : Kuhlman, et al.
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DECLARATION OF TIMOTHY COFFINDAFFER UNDER 37 C.F.R. §1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

All statements made herein are true to the best of my knowledge, or, if made upon information and belief, are believed to be true.

I received a B.S. Degree in Chemistry from Grove City College in 1981, and a Ph.D. in Chemistry from Purdue University in 1985. I have been employed by The Procter & Gamble Company of Cincinnati, Ohio since 1985, assignee of the present application, where I am currently employed as a Research Fellow. I have worked with personal cleansing compositions in the laboratory for about 18 years.

I am an inventor on the above-captioned patent application. I have read Date et al. (U.S. Patent No. 5,674,509) (hereinafter referred to as “Date”), Noveon (CASF-1 “Carbopol Aqua SF- Polymer” Dec. 2000 edition) as evidenced by Patel (hereinafter referred to as “Noveon”), McKelvey et al. (U.S. Patent No. 6,589,517 (hereinafter referred to as “McKelvey”) and Fair et al.(U.S. Patent No. 5,869,441 (hereinafter referred to as “Fair”) cited by the Examiner.

It is my intent in this current declaration to demonstrate that one skilled in the art would not combine Date and Noveon, Date and McKelvey and Date and Fair. It is also

my intent in this current declaration to demonstrate that the combination of the teachings of Date and Noveon, Date and McKelvey and Date and Fair would not result in the compositions of the present invention. It is also my intent to show that none of the cited references teach or suggest the benefits of the polymeric system used in the present invention.

The present invention is a lathering cleansing composition comprising an alkyl ethoxylated polymer, at least one lathering surfactant, an acrylate cross linked copolymer, and a particulate material. The compositions of the present invention provide good lathering and are readily rinsed off. The particulate materials enhance cleansing and exfoliation, as well as, provide conditioning benefits without damage or irritation.

There are multiple forms of compositions cited in the references cited. All of these forms have different properties that require different approaches to formulation with benefits and limitations with which I will attempt to describe.

The first form of composition I will attempt to describe is the liquid lathering surfactant system. The composition of the present invention and the Noveon reference is a liquid lathering surfactant system. A liquid lathering surfactant system typically is composed of micelles which are dynamic in the product. The lifetime of the micelle can vary between 10^{-6} seconds to minutes. This means that micelles (and the structure they produce) are rapidly changing. The rapidly changing micelles are the reason that a liquid surfactant system lathers so quickly. Liquid lathering surfactant systems typically require the use of thickeners to make a consumer acceptable formula, so the product will not run through the fingers. One can also suspend insoluble materials in liquid lathering surfactant systems by adding a suspension polymer to create sufficient yield to hold the insoluble material in place. Thickness or viscosity is different than yield in these types of systems. Thick micelle systems cannot be assumed to suspend insoluble particles due to the dynamics of the liquid lathering surfactant system.

The second form of composition I will attempt to describe is the liquid crystal or gel-net work systems. The Date and McKelvey references describe liquid crystal or gel network systems. Liquid crystal or gel networks are a higher order structure than those of micelles. Liquid crystal or gel networks are formed by heating non-lathering fatty materials in water which then swell to incorporate water in an ordered structure providing

a viscous opaque structure. Liquid crystal or gel networks have lifetimes that typically outlast the product use time (years) as long as the product is stored below the transition point which is typically greater than 50C°. Liquid crystal or gel-net works are typically used for hair conditioners and leave-on moisturizers. Because the highly swollen fatty systems thicken and are not changing, suspension and thickening systems can differ greatly. In addition, materials typically used in a hair conditioner or moisturizer would render a lathering surfactant system non-lathering.

The third form of composition I will attempt to describe is the bar soaps. The Fair reference is a bar soap. Bar Soaps are solid non-flowable materials until the compositions have been taken above the melt point. Bar soaps do not require any type of suspension system to incorporate insoluble particles. Insoluble materials are just incorporated into the matrix and are held just like gravel in concrete. When water is added with friction (e.g. rubbing the bar in the hands), the solid surfactants are slowly solubilized into the water and can release insoluble materials.

Below the details of the disclosures of Date, Noveon, McKelvey and Fair are summarized.

The Date reference describes a leave-on lotion/moisturizer. The Date reference describes surfactants that are used to emulsify oils and set up liquid crystalline systems. The surfactants in the Date reference are not “lathering surfactants”. Claim 1 of the Date reference states the need to form a liquid crystal in water with Arlatone 2121 as the key raw material. Formation of liquid crystals with Arlatone 2121 is well documented in the literature.

The Noveon reference describes a clear baby shampoo formula with high levels of non-ionic surfactants. Non-ionic surfactants are known to be quite mild to the skin and eyes but typically do not lather due to their inability to pack at the interface. The issue with packing can mean less contribution from the surfactant structure and difficulty of thickening (so the product will stay on the hands while applying to the hair). Noveon teaches that the Acrylates co-polymer (SF-1) will thicken this system. The yield value that Noveon reports is 30 to 50 dyne/cm² which is not enough to suspend insoluble materials in a lathering surfactant system, such as present invention.

The McKelvey reference describes a hair conditioning system composed of cationic surfactants and fatty alcohols to form gel networks. McKelvey discloses and teaches the use of ethoxylated polymers. McKelvey's disclosure is also limited to cationic surfactant/fatty alcohol systems. As disclosed in Column 2 line 56, "Associative polymers can thicken composition as a result of intermolecular association between the various water-insoluble hydrophobic components which form part of, or are bonded to (directly or indirectly) a water-soluble polymer backbone. Here McKelvey acknowledges the cationic surfactant and long chain alcohol form an insoluble component. Further, McKelvey does not teach the use of water soluble surfactants. It is also noted that the compositions of McKelvey are non-lathering composition which is opposite of the claimed invention. As described above, these gel network systems do not typically change (non-dynamic) during product consumption. Many are self suspending. McKelvey further describes polymers that will not suspend materials in a micelle (lathering) system. McKelvey's polymers are known to thicken and not suspend in lathering surfactant micelle systems.

The Fair reference describes bar soap products and mildness advantages for hydrophobically modified ethylenediaminetriacetic acid surfactants, a new surfactant. Fair's bar soaps are composed of solid surfactants and only have 5% water in them. Fair actually teaches the need for both anionic and amphoteric surfactants and hydrophobically modified ethylenediaminetriacetic acid surfactant. Fair states that the combination does not lather as well as typical anionic surfactants. According to Fair, "by adding relative low levels of SLES, and Cocamidopropyl betaine as coactives to the Na-LED3A solution, the lather performance is greatly improved." SLES is anionic and Cocamidopropyl betaine is amphoteric. These systems by themselves will lather well. Many mild surfactants as claimed by Fair with Na-LED3A have very poor lathering profiles.

One skilled in the art would not use Date as a reference to reject the present invention or modify it with the references to get to the composition of the present invention. Date uses Steareth 100 which is a well known emulsifier and widely used emulsifier for moisturizers and is used as such in these formulas. Arlatone 2121 is known

for forming liquid crystals and as disclosed in Date as a requirement in Claim 1. In addition, one would not use lathering surfactants in a leave-on moisturizer because they would harm the skin. The same structure that produces a good lather also breaks down the lipid bilayer in skin. Arlatone 2121 forming liquid crystals keeps these systems from lathering and also results in little to no interaction with the lipid bilayer of skin.

The combination of Date and Noveon that was proposed would not have been combined by one skilled in the art. The combination of Date and Noveon do not result in the composition of the present invention. The Date reference describes a liquid crystal or gel network system. The Noveon reference is a liquid lathering surfactant system. The physical liquid crystal structure in Date does not allow the technology of Date to be combined with the micelle chemistry of the baby shampoo of Noveon. One skilled in the art would never combine leave-on lotion technology with a lathering surfactant system. The two do not mix. Materials used in moisturizers, such as volatile silicone and/or fatty esters, will typically render a lathering system non-lathering and also destroy micelle structure. As well, due to the fact that the physical states of the systems are different, the mechanisms for thickening and suspension are not similar. Moreover, the combination of Date and Noveon would not result in the compositions of the present invention.

The combination of Date and McKelvey that was proposed would not have been combined by one skilled in the art. The combination of Date and McKelvey do not result in the composition of the present invention. The Date and McKelvey references are both liquid crystal or gel network systems. Neither Date nor McKelvey describe lathering surfactant system. McKelvey actually discloses the use of cationic surfactants. McKelvey further describes polymers that will not suspend materials in a micelle (lathering) system. McKelvey's polymers are known to thicken and not suspend in lathering surfactant micelle systems. Special suspension polymers have been made to work with cationic surfactant systems that differ from those of anionic and lathering surfactant systems. The combination of Date and McKelvey does not teach anything that would translate to an lathering surfactant system. Further, the combination of Date and McKelvey would not result in the compositions of the present invention.

The combination of Date and Fair that was proposed would not have been combined by one skilled in the art. The combination of Date and Fair do not result in the composition of the present invention. The Date reference describes a liquid crystal or gel network system. Fair teaches a bar soap. Neither Date nor Fair describe lathering surfactant systems. Fair actually teaches the need for both anionic and amphoteric surfactants and hydrophobically modified ethylenediaminetriacetic acid surfactant. Fair states that the combination does not lather as well as typical anionic surfactants. According to Fair, "by adding relative low levels of SLES, and Cocamidopropyl betaine as coactives to the Na-LED3A solution, the lather performance is greatly improved". SLES is anionic and Cocamidopropyl betaine is amphoteric. These systems by themselves will lather well. Many mild surfactants as claimed by Fair with Na-LED3A have very poor lathering profiles. Given the Date reference describes a leave-on moisturizer and the Fair reference describes a bar soap, I would not combine the references. Moreover, the combination of Date and Fair would not result in the compositions of the present invention.

In conclusion, none of the cited references, Date, Noveon, McKelvey and Fair teach or suggest the advantages and benefits of the combination of an ethoxylated polymer, cross-linked polymer, particulate material and a lathering surfactant used in the present invention.

Further Declarant sayeth not.

17 June 2008

Date

T. A. And J. M. A.

18 U.S.C. §1001 Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or advice a material fact, or makes any false, fictitious or fraudulent statement or representation, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than five years, or both.